Early Journal Content on JSTOR, Free to Anyone in the World

This article is one of nearly 500,000 scholarly works digitized and made freely available to everyone in the world by JSTOR.

Known as the Early Journal Content, this set of works include research articles, news, letters, and other writings published in more than 200 of the oldest leading academic journals. The works date from the mid-seventeenth to the early twentieth centuries.

We encourage people to read and share the Early Journal Content openly and to tell others that this resource exists. People may post this content online or redistribute in any way for non-commercial purposes.

Read more about Early Journal Content at http://about.jstor.org/participate-jstor/individuals/early-journal-content.

JSTOR is a digital library of academic journals, books, and primary source objects. JSTOR helps people discover, use, and build upon a wide range of content through a powerful research and teaching platform, and preserves this content for future generations. JSTOR is part of ITHAKA, a not-for-profit organization that also includes Ithaka S+R and Portico. For more information about JSTOR, please contact support@jstor.org.

Risks of the sea are eliminated in my project, savages, wild beasts, poisonous reptiles and vermin there are none ; fever and malaria are unknown.

I want you to divest yourselves of the popular conception of the Arctic regions in general and Greenland in particular, as a place where eternal snow, overpowering cold, and Cimmerian darkness hold unbroken sway throughout the year, and where the unavoidable fate of any poor mortal is, sooner or later, to drop into the snow benumbed and starving.

The brilliancy and teeming life of the Arctic summer, during which my work will be done, is equalled nowhere else on the globe, and as for the dangers and hardships of an eighteen months' sojourn, where I propose to go, they are no greater, sentiment and imagination put aside, than in Northern Norway, in Siberia, in the higher Alps, or, to come nearer home, than those experienced every winter by the Dakota and Montana farmers and their families.

R. E. PEARY.

JOURNEYS ON THE INLAND ICE.

The pages that follow, most of them taken, and often in his own words, from Dr. Nansen's "The First Crossing of Greenland," Chapter XVI., are added to give to the readers of Mr. Peary's paper a comprehensive view of what is known concerning the Inland ice of Greenland. The responsibility for this abstract, as well as for the observations and notes which occur in the course of it, is sufficiently indicated by the initials at the close of the paper.

The first suggestion of a journey to the interior of Greenland is found in a letter of instructions written in 1723 by the manager of the Bergen Company to Hans Egede, in these words: "It seems to us quite advisable, if indeed the thing has not been done already, that a party of eight men should be told off to march through the country, which according to the map would appear to be only from eighty to a hundred miles across at its narrowest part, for the purpose of reaching, if it be possible, the east side, where the old colonies have been, and on their way to look out for forests and other things."

Egede thought the scheme was not feasible; but in 1728 positive instructions were sent to Major Claus Enwold Paarss, the first and last titular governor of Greenland, "to spare no labour or pains, and to allow himself to be deterred by no danger or difficulty, but to endeavour by all possible means and by one way or another to cross the country to the aforesaid 'Österbygd' (Eastern Settlement; the old colony) for the purpose of learning whether there still exist descendants of the old Norwegians; what language they speak; whether they are Christians or heathens, as well as what method of government and manner of life prevail among them."

Paarss started on his expedition April 25, 1729, with two officers and five men, and sailed far into Ameralik fiord, where Nansen's overland journey ended in 1888. The party did not go very far. "After we had marched for two days,"—says Paarss, in his report,—"we came at noon on the third day to the edge of the 'ice mountain'; but when we had ascended this and advanced upon it for two hours at our great peril, all further progress was denied us by reason of the great chasms which we found thereon. . . . As soon as we saw that no further advance was possible, we set ourselves down upon the ice, with our guns fired a Danish salvo of nine shots, and in a glass of spirits drank the health of our gracious King on a spot on which it had never been drunk before, at the same time paying to the 'ice mountain' an honour to which it had never before attained; and after we had sat and rested ourselves for about one hour we turned back again."

Paarss found great stones lying upon the ice, and conceived that they had been carried there by the violent winds. He compares the sharp-edged ice to "white sugar-candy"; and his party returned to Godthaab on the 7th of May, from "this dangerous and very laborious expedition," not wholly without its convivial moments.

It is stated in a book entitled, *Nachrichten von Island, Grönland and Strasse Davis*, published at Hamburg in 1746, that a ship's captain attempted to penetrate into the interior of Greenland by all manner of expedients, employing "even the long footboards which are used, as is well known, by the Lapps and others for their winter traffic. But he failed to penetrate far, and after losing one of his men, who ventured too far on in front and sank into the depths before the eyes of the party, while they heard his shrieks and lamentations, but could not go to his help, he was obliged to turn back without his follower, and without any hope of ever advancing further." Dr. Nansen adds that this passage is interesting not only because it contains the first mention of the use of *ski* upon the Inland ice, but also because it records the only known instance of loss of life on the same ground.

In 1751 Lars Dalager, a merchant of Frederikshaab, made an excursion into the interior. He went out at the end of August, to divert himself with his gun, and "resolved to set out on a journey across the 'ice mountain' to 'Österbygd,' to which determination I was led by a new discovery made in the preceding month of July by a Greenlander who had been so high up while out hunting that he could see distinctly, as he said, the old Kablunak mountains on the eastern side.* This moved me, as I have said, with a desire, at least to see the land, like Moses of old, and I took with me the aforesaid man and his daughter, together with two young Greenlanders. We set out upon our journey after having already advanced thus far into a fjord by the southern side of the glacier (the one known in Greenland and Denmark as 'Fredrikshaabs Isblink')."

The party left the fjord September 2, reached the edge of the ice the next day, and the day after, "in the morning," says Dalager, "we committed ourselves to the ice, purposing to reach the first mountain-top, which lies in the middle of the ice-field and which was five miles distant from us. So far the ground was as flat and smooth as the streets of Copenhagen, and all the difference that I could see was that here it was rather more slippery, but on the other hand one had not to wade out to the sides in the slush in order to avoid being overthrown by the posting-horses and carriages."

---

* *Kablunak*, or more correctly *Kavdlunak*, is the Eskimo name for Europeans or now more especially Danes.

They went on to the uppermost mountain, called Omertlok, across ice so rough and full of cracks that the march of five miles consumed seven hours. From the top of the mountain they had a wide view inland, and saw in the distance above the north-east horizon some peaks, which Dalager took to be mountains on the east coast, but which have since been identified as *nunataks* (islands or peaks) lying some twenty miles from the western edge of the ice. They are now known as *Jensen's Nunataks.*

Standing on this summit, "we began," says Dalager, "to fall into admiration at the great prospect in all directions, and above all at the mighty ice field which stretched away up the country and across to the 'Eastern Settlement,' where the mountains like those on which we stood were covered with snow." The party remained on the peak till seven o'clock in the evening, when Dalager "ended the day with an address to the Greenlanders, which treated of the inhabitants of Österbygd in old times and of their physical as well as spiritual welfare. Meanwhile the sun went down and we descended the mountain some way and then laid ourselves down to rest."

The journey was continued no farther, the leader finding himself "constrained for many reasons to set my face towards home, one being very important, that we were now going no better than barefooted. For, though each of us was provided with two pairs of good boots for the journey, yet they were already quite worn out by reason of the sharpness of the stones and ice. And as the handmaid whom we had in our company had, to our great misfortune, lost her needle, we could get none of our things mended. For this cause we were much embarrassed, though we consoled each other with laughter as we contemplated the naked toes peeping out from the boots."

They turned homeward on the 6th of September and on the 8th reached the camping place by the fiord.

"I cannot here forbear to mention," says Dalager, "with what unusual appetite I emptied that evening a whole bottle of Portuguese wine, after which I slept on till the following day at noon."

Dalager believed that the crossing of Greenland was impracticable, not on account of the ice, but because provisions could not be carried and, also, because the cold was too great to be borne for many successive nights. "I can say," he declares, "that of all the bitter winter nights on which I have camped on the ground in Greenland, none have so much distressed me by reason of the cold, as these nights early in the month of September."

Dr. Nansen adds his own testimony to the same effect about the cold of September.

In the last century Fabricius, the naturalist who wrote on the glacial phenomena of Greenland, derived many of his facts from personal observation of the Inland ice.

It was not till the middle of the present century that the attention of the scientific world was drawn to the significance of the Inland ice by the writings of Dr. H. Rink.

He pointed out the enormous magnitude and thickness of the great ice-cap and the fact that Greenland is the only country in the northern hemisphere which supplies the great icebergs of the Arctic and North Atlantic. He has calculated that each of the great fiords must send out into the sea not less than eight or ten million cubic feet of ice every year.

Dr. Rink's studies and explorations showed the necessity of more extensive investigations at the only accessible spot where the glacial forces were now at work on the largest scale, and a new series of attempts to reach the interior of Greenland began about the year 1860, with the Expedition of the *Fox*, under command of Sir Allen Young, to examine into the possibility of carrying a telegraph-cable across Greenland to America.

There seems to have been at one time, according to Dr. Nansen, an idea of landing a sledge expedition, in charge of Dr. John Rae, upon the east coast, with the object of crossing the ice to the west side. Dr. Nansen tells the story in these words :

" The *Fox* reached the southern part of the east coast about the middle of September, and the sledge-party could apparently have been landed here without difficulty. At this point, however, those in charge of the expedition seem to have thought better of the scheme, so the ship went round Cape Farewell to the west coast instead. Here, at the end of October, Dr. Rae made an attempt upon the ice in the neighborhood of the colony of Julianehaab. From the narrative of Lieutenant Zeilau, who accompanied the party for a time, one would gather that the expedition did no more than contemplate the ice from a distance, but from Dr. Rae's own account it appears that he did really set his foot upon the glacier, but was very soon brought up by a deep and wide crevasse that effectually stopped further progress.' This, I may perhaps be allowed to say, must have been a remarkable crevasse indeed."

Dr. Nansen takes the quotation concerning the crevasse from the *Proceedings of the Royal Geographical Society*, August, 1889, to which he refers in a foot-note. The account in the *Proceedings* shows that even with the best intentions Dr. Nansen cannot always trust his memory.*

Dr. Isaac I. Hayes made an attempt upon the Inland ice from Port Foulke, in Lat. 78°, 18′ N., in 1860.

---

* Sir Allen Young (who commanded the *Fox* in 1860) said : . . . "On September 12th, after passing through 100 miles of ice, they arrived at the coast of Greenland, about 63° N. The sight of the coast was simply appalling, with precipitous peaks and cliffs, and glaciers running down to the sea. He was about one mile off the land, and could have landed a party ; but feeling that he could not keep his ship in her position, he thought it better to report in favor of carrying a cable round the south into one of the western fiords. Afterwards on the western inland ice, he accompanied Dr. Rae for two days, but heavy snow intervened and he had great difficulty in getting back to his ship. That was in the middle of November. He wished to ask Dr. Nansen if he thought it would be possible to land a telegraph cable on the east coast and carry it across to the west coast.

"Dr. Rae begged to express his admiration, and to re-echo the words of previous speakers, at the manner in which Dr. Nansen had carried out the arduous work he had undertaken. . . . . . Regarding the *Fox* Telegraph Expedition, of which Sir Allen Young spoke, and of the overland part of the work, of which he (Dr. Rae) had been placed in charge by Col. Schaffner, the crossing of Greenland, although it was talked of, there was not the slightest intention of its being attempted, not the smallest preparation of any kind having been made for such an arduous piece of work ; and if there had been any such preparation, the lateness of the season (November) would have been a fatal hindrance. All that was desired or expected to be done was accomplished by getting a few miles inland on the glacier, and by reaching a deep and wide crevasse that effectually stopped further progress ; and showing that to bring a telegraph wire across the ice would be very difficult, if not impracticable, and in his (Dr. Rae's) opinion useless."—*Proceedings of the Royal Geographical Society*, 1889, pp. 484–485.

Dr. Rae was followed by Admiral Sir E. Ommanney, and then Dr. Nansen thanked all the speakers for their kind words, and answered the inquiry as to the possibility of laying a cable across the ice ; but he asked no question, when question was so easy, about the "remarkable" crevasse, which has left an aching void in his mind.

The party started October 22, marched about sixty miles and returned after six days, having endured great suffering from the cold. The ice was extremely rough and the snow-crust gave way under the feet, but the distances made were, five miles on the second day, thirty on the third, twenty-five on the fourth, and nearly forty on the fifth, on the return. These measurements, Dr. Nansen rightly thinks, can hardly be accepted.

The next attempt was that made by Mr. E. Whymper, in the summer of 1867, from a little fiord named Ilordlek, to the north of Jakobshavn, and nearly in Lat. 69°. Mr. Whymper reached the Inland ice at about twenty miles north of Jakobshavn, and found the surface smooth and hard for six miles and eminently fitted for dog-sledging.

He turned back, therefore, full of hope that he might succeed in walking right across Greenland. However, as at Ilordlek the ice does not come down to the water's edge, Mr. Whymper determined to look for a spot where he could take to the ice at once, and avoid the transport of his baggage over land. He found no suitable place and had to return to the first spot, where one difficulty after another delayed him for nearly a month.

On the 20th of July the expedition was ready to start. There were six in the party. Two days were spent in carrying the baggage from the fiord to the edge of the ice, and three more in waiting for favorable weather.

When Mr. Whymper came to view the surface, which had been so smooth a month before, he found that the snow had melted away and "had left exposed a veritable ocean of ice, broken up by millions of crevasses of every conceivable form and dimensions." An attempt was made to push over the ice to the eastward, but, after going a distance of two miles with several hours' hard work, two of the sledges were broken and the rest badly shaken, and the party came to a halt. Three men went forward a mile or two to see if the ice improved, but they reported that it was even worse, and Mr. Whymper abandoned his purpose and returned to the fiord.

Three years after Whymper, Baron Nordenskiöld and Prof. Berggren penetrated a considerable distance beyond the outer margin of the Inland ice, and spent several days in succession encamped upon its surface. Accompanied by two Greenlanders, the Swedish explorers, on the 19th of July, 1870, passed the edge of the ice in the northern arm of Aulatsivikfjord, which lies to the south of Egedesminde, or near Lat. 68° 20′ N. Provisions were taken for thirty days, and the whole equipment was to be hauled on a sledge, but the task was too heavy and Nordenskiöld determined, on the second day, to leave the sledge and a portion of the provisions behind. Each man shouldered his load of the remainder, and the party proceeded. July 21, at 1,400 feet above the sea, the Greenlanders refused to go farther, and went home the next day. Nordenskiöld and Berggren continued the journey. On the 22d they were at a point in Lat. 68° 22′ N., and 56 minutes of longitude east of their camp on the fiord, and at an elevation of nearly 2,000 feet.

They spent the night of the 23d in Lat. 68° 22′ and 20 minutes farther to the east than on the previous day, at an elevation of only 1,900 feet. Scarcity of food made it necessary to return, but to obtain a view over the ice field the travellers mounted a ridge. From this point they saw that the plateau continually rose, unbroken by any range of peaks. Their turning-point was 2,200 feet above the sea, and about 83 minutes of longitude, or 35 miles, to the east of the northern arm of Aulatsivikfjord, which they reached July 25, after seven days spent on the Inland ice.

The surface of the ice was either furrowed by deep, and sometimes broad, crevasses, or consisted of ridges and hollows, the former as much as forty feet in height and with sides sloping at angles of from twenty-five to thirty degrees. There were many rapid streams, that flowed in deep channels in the ice and often could not be crossed. These rivers generally ended in great holes, or "glacier-wells," into the dark-blue depths of which they were precipitated in roaring cascades.

At one spot was found a kind of spring or fountain, or intermittent column of water mixed with air, projected upwards. There were many small lakes and pools, and "when one laid the ear down to the ice one heard from all sides a peculiar subterranean murmur from the streams enclosed below, while now and again a single loud cannon-like report announced the formation of some new crevasse."

The weather was bright throughout the journey and the temperature, a little above the ice, rose in the day to 45° or 46° Fahr., and in the sun to 75° or even 85°. After sunset the pools of water froze, and the nights were cold.

It was on this expedition that Nordenskiöld observed and described the "glacial dust" or "cryoconite," a fine grey powder which was found strewn on the surface of the ice, as far as the explorers went. Owing to the absorption of heat from the sun this dust had sunk into the ice and had caused the formation of perpendicular cylindrical holes, one or two feet deep and from two lines to two feet in diameter.

These holes lay so thick that there was often no place between them on which to set the foot. At the bottom of the holes, which were always full of water, the dust lay in a deposit some millimetres in thickness. Nordenskiöld considers that this dust is of cosmic origin, and he believes that the earth is constantly receiving a reinforcement of matter in this shape from the surrounding universe. It has been shown, however, that this powder, in its constitution, has a remarkable resemblance to the materials of the coast mountains; and it is a fact that the quantity of the dust decreases the farther one penetrates towards the interior, while on the east coast by Umivik, where bare land almost disappears, Dr. Nansen found scarcely any dust at all upon the ice.

In 1871 an expedition was sent to the interior by the Inspector of North-West Greenland, but it seems to have accomplished nothing.

In 1872 Mr. Whymper explored the district to the north of Disco Bay and by Umanak Fjord. He made no attempt on the Inland ice, but ascended, on the 18th of August, Kelertingouit, a mountain near Umanak. From the summit, 6,800 feet above the sea, he looked over the plateau and saw "a straight, unbroken crest of snow-covered ice, concealing the land so absolutely that not a single crag appeared above its surface." He measured with a theodolite the angle to the apparent summit of the ridge and found it to be considerably in excess of 10,000 feet.

One of the strongest arguments of those geologists, who still held out against the glacial theory, was that all the glaciers, known and studied in Europe, had too small a rate of progression (two feet in a day) to produce the enormous results attributed to their eroding and quarrying power. Greenland was to furnish an answer to this argument.

In 1875 the Norwegian geologist Amund Helland visited North Greenland, to measure the rate of movement of the glaciers and to see what results they were producing. He examined, during June, July and August, that portion of the coast which lies between Egedesminde, in Lat. 68° 42′ N. and the fiord of Kangerdlugssuak in the Umanak district, near 71° 15′ N., and studied five " ice-fjords " and a number of minor glaciers, as well as Ilordlek Fjord, where the glacier does not reach the sea. He also ascended the Inland ice at about the spot chosen by Whymper.

Helland found that the glacier in Torsukatakfjord had a daily rate of progress of a little more than thirty feet, while the great glacier in the "ice-fjord" of Jakobshavn moved at the rate of sixty-four feet in a day.

It was in 1875 that Dr. Rink suggested the crossing of Greenland by an expedition from the district to the north of Fredrikshaab. He wrote : " I think that it must be done with sledges hauled by men, and that two small ones ought to be constructed in the most careful way and furnished with every necessary. Besides the scientific conductor of the expedition and his assistant, I should say about four Europeans would make the proper complement."

"This idea," says Dr. Nansen, "agrees, as will have been seen, in several particulars with my scheme, but, curiously enough, I had never come across this passage till I returned from Greenland."

In 1876, the Danish Government instituted a series of scientific investigations in Greenland. The results of these investigations, which are still continued, are recorded in the *Meddelelser om Grönland*, a work issued periodically by the Board of Commissioners, charged with the undertaking.

The first expedition, under the geologists Steenstrup and Kornerup and Lieut. G. Holm, was to examine the edge of the ice-field in the district of Julianehaab. It was proposed to go some little distance in to a group of *nunataks*, known as the Jomfruer and marked on the maps of Greenland, in order to see whether that would make a suitable starting-point for a subsequent expedition on a larger scale. The party was stopped at the outset by the general roughness of the ice and the size of the crevasses,* and nothing was done beyond measuring the movement of the ice in three glaciers, the highest rate found being some twelve feet in the twenty-four hours.

An expedition in 1877 to the northern part of Fredrikshaab was defeated by the unsettled weather.

In 1878, Lieut. Jensen, the geologist Kornerup, an architect named Groth and an Eskimo, made their way,

---

*Dr. Nansen finds nothing remarkable in these crevasses, though they also were in Julianehaab.

July 3, to the *nunatak* Nasausak, which is 4,700 feet above the sea, and on the south side of the glacier known as Fredrikshaabs Isblink. The condition of the ice being considered unsuitable at this place, an attempt was made from a new starting point, Itivdlek, on the north side of the glacier.

The ice was exceedingly rough and every one in the party, now increased by the addition of four Greenlanders, suffered more or less with snow-blindness.

On the 24th of July they reached the group of *nunataks* which Dalager, in 1751, had taken to be the mountains of the east coast. These *nunataks* were forty-five miles from the starting-point, and about twenty from the nearest point on the margin of the ice-field. On the largest of these peaks, 5,000 feet above the sea, the explorers were detained for a week, by a snow-storm.

Capt. Jensen ascended the peak July 31, and saw the Inland ice rising uninterruptedly towards the east, and ending in a horizon considerably higher than the peak on which he stood. The same day the homeward march was begun, and the camping-place at Itivdlek was reached on the 5th of August. The efforts of the Government have been confined, since 1878, to short journeys to the near-lying *nunataks*, to explorations along the edge of the ice-field and to measurements of the movement of glaciers. Of the results, one of the most noteworthy is the series of observations made by Lieut. C. Ryder, in August, 1886, which established, for the Upernivik glacier in Northern Greenland, a daily advance of no less than one hundred feet.

In 1880 the Swedish geologist Holst ascended the

Inland ice at several points in South Greenland. He found that Nordenskiöld's "glacial dust" was composed of the same substances as the mountains of the coast.

Three years later Nordenskiöld made his second Greenland journey. He had formed a theory that it was a physical impossibility for a large continent, like Greenland, to be entirely covered with a mantle of ice under the climatic conditions which prevail elsewhere upon the globe to the south of Lat. 80° N.

His argument was that for the formation of an ice-field or glacier a certain amount of snow or rainfall is necessary, and that the amount deposited in the interior of Greenland cannot be sufficient for the purpose.

All the air, he considered, which came from the surrounding seas and ought to bring moisture with it, had first to pass the ranges of high mountains which border the coast.

As the air passed up the sides of these mountains it would be cooled, and as it rose it would become expanded through the diminished atmospheric pressure, and thus it would be compelled to deposit most of its moisture on the coasts.

In so doing it would set free its latent heat and grow warmer, and its temperature would rise still higher as it descended on the far side of the mountains and the atmospheric pressure increased. In this case, it would reach the valleys and depressions of the interior in a dry and warm condition, like the Föhn of Switzerland.

Nordenskiöld's purpose, in this second expedition, was to test his theory by pushing across the interior of Greenland to the east coast. He started on the 4th of July from a spot a little to the south of Disco Bay, with a party of ten, two of them Lapps, provided with their *ski*. In eighteen days the party advanced seventy-three miles, and reached an elevation of nearly 5,000 feet. Here the snow was so wet that men and sledges sank into it, and Nordenskiöld found himself compelled to stop; but he sent forward the two Lapps, with instructions, in case they came upon bare ground, to collect specimens of all the plants they found there.

Three days later (July 24) the Lapps returned and reported that they had gone about 145 miles into the interior and had reached a height of 5,850 feet, and that the surface was everywhere an unbroken expanse of snow. Dr. Nansen thinks, with reason, that the Lapps overestimated the distance they had travelled.

One incident of their journey tended to confirm Nordenskiöld's belief in the existence of bare land somewhere to the north. Two ravens had come flying from that quarter, and had turned back as soon as they reached the tracks of the Lapps in the snow; and these birds are not in the habit of straying far, in the summer time, from their nesting-places in the coast mountains.

None the less, Nordenskiöld made up his mind to turn back, and reached his encampment on the 3d of August.

The next expedition was Mr. Peary's, in 1886. He had for a companion Mr. Christian Maigaard, and, for the first few days, the help of two Greenlanders, a man and a woman.

The starting-point was Pakilsokfjord, Lat. 69° 30′ N., and the ascent of the ice began June 28.

The provisions, calculated for thirty days, were hauled, with the baggage, on "two nine-foot sledges, thirteen inches wide, made of hickory, steel and hide, on a modified Hudson Bay pattern, and weighing complete twenty-three pounds each." One pair of *ski* and one pair of Indian snowshoes, each, were taken. There was no tent, but a shelter was made of a tarpaulin and the two sledges. The travelling was done by night and the sleeping by day, and for a time, while the state of the snow permitted, snow huts were built every day.

During the greater part of the journey the temperature was below freezing-point, but on the 9th of July a wind from the south-east raised the mercury to 46° Fahr.

On the 17th Mr. Peary's reckoning of longitude showed that he was about one hundred miles inland from the ice-edge, and at an elevation of 7,525 feet.

A snow storm detained the two explorers till the 19th, when the weather cleared sufficiently to allow of an observation being taken at mid-day.* In the evening they turned back and, with the wind behind them, lashed the two sledges together and rigged up a vessel with alpenstocks for a mast, a tarpaulin for a sail, and a *ski* with an axe attached for a rudder. On this craft they sailed, according to Maigaard's calculations, twenty-seven miles the first night, thirty-two the second, and fifty-four the third. After this they took to hauling, on account of the rough surface. July 24, they reached the camp at the fiord, having spent twenty-three days on the ice.

Dr. Nansen is disposed to doubt Mr. Peary's report. He says: "Unfortunately, Peary's longitude was only based, as it seems, on some observations of altitude taken with the theodolite about noon on July 19. The expression *circum-meridian sights*, which both he and Maigaard use, is not quite clear in itself. These so-called 'simple altitudes' are, besides, notoriously uncertain for longitude reckonings.

---

*Mr. Peary says: "Then followed a perfect day (19th) warm, clear, almost calm, enabling me to get a good observation."

"The chronometer, too, had come to a standstill and an ordinary watch, which Peary declares to have been very trustworthy, was used in its place; but, as far as I can see from his account, no observations were taken subsequently by the coast to determine this time-keeper's accuracy. The distance of a hundred miles from the margin of the ice cannot, therefore, be considered as established beyond all doubt. The days' marches, again, which are said by Maigaard to have often been between twelve and eighteen miles, may strike the reader as somewhat long. I know well from my own experience that a great deal of work is necessary to cover so much ground with a heavy sledge in tow, if the gradient be ever so little against one."* He adds, in a footnote:

"It is difficult to say, too, what faith we can place in this elevation of 7,525 feet, as it was only based upon the records of an aneroid barometer. . . . . . Nevertheless, Peary's height does not seem at all too much for

---

*The best answer to this remark concerning the rate of progress is Dr. Nansen's description of the surface travelled by Peary and Maigaard: "The ice these two passed over was, with the exception of the first part, very level throughout, and more so even than that which Nordenskiöld had traversed in 1883. There were not many crevasses, and for the greater part of the way the surface was covered with a layer of dry snow, into which, at the extreme point which they reached, Peary could drive his staff six feet deep. This state of things must have made progression very much easier than usual."—*The First Crossing of Greenland*, Vol. 1, p. 505.

the distance from the coast. We were quite as high as this when we were no more than 110 kilomètres, or 68 miles, from the east coast, and 160 kilomètres, or 111 miles, from the west; and I should be inclined to think that the gradient must be about the same between Lat. 69° and 70° N."*

Dr. Nansen's conclusion is, after all objections, that Peary's expedition is one of the most noteworthy that have been recorded in connection with the Inland ice, and that admiration is due to the two travellers who did so much alone, and with such small resources. Mr. Peary and Mr. Maigaard have shown no disposition to over-rate their own performance, and it may be supposed that they will receive, with some measure of calmness, the approbation which Dr. Nansen bestows upon them.

---

*Mr. Peary describes his instruments and methods as follows:

"This distance is based on an excellent series of twelve circum-meridian sights at this camp, with the theodolite placed within the walls of our hut to protect it from the wind; a series of ten similar sights at the tent; and time as given by one of the best Elgin watches, carried, during the five days intervening between the observations, in a pocket on the inside of the bosom of my flannel shirt. Having carried the watch two or three years, I know its variation in that time could by no possibility exceed thirty seconds either way. For several reasons no other observations are given.

"In the selection of my instrumental outfit, I had chosen a light traveller's theodolite, as being lighter and more generally useful than a sextant and artificial horizon. But under the conditions of continuous wind and deep snow which I encountered, it was impossible to use the theodolite except by setting it in the compacted bottom of a snow-house after we had slept in it, with the wall of the hut to shield the instrument from the wind.

"In scaling the glacier face, my chronometer had had the usefulness shaken out of it, and after this loss I did not feel disposed to add the labor and discomfort of observations of approximate value only, to the constant and imperative demands of the numerous details, attention to which was the price of our advance. My daily advances were only estimated, and therefore I do not present the distances.

"The elevations are those indicated by one of Keuffell & Esser's best $26 pocket aneroids, with attached thermometer and compass. The ascent on the outward trip, as shown by this barometer, was 7,525 ft., the descent on the return (one hundred and thirty-three hours of continuous fine weather), 7,450 ft. Mean, 7,487 ft., 6 in.

"Temperatures were shown by a Signal Service thermometer."—*Journal of the American Geographical Society*, Vol. xix, p. 276.

The next expedition to the Inland ice was Dr. Nansen's, in 1888. A Norwegian sealer, the *Jason*, commanded by Moritz Jacobsen, took up the party at Isafjord in Iceland, and set sail on the 4th of June for the east coast of Greenland. There were six in the party; Dr. Nansen, Otto Sverdrup, Oluf Christian Dietrichson, Kristian Kristiansen Trana, and two Lapps, named Samuel Johannesen Balto and Ole Nielsen Ravna. On the 11th of June they sighted the Greenland coast, about sixty miles away. At noon they were in Lat. 65° 18′ N., Long. 34° 10′ W. The coast was lined with ice, drifting with the currents, the floes now opening, now packing close together, and it was not till July 17th that the boats pushed off from the *Jason* in the evening to reach the land across Sermilikfjord. For twelve days they were tossed to and fro and carried along with the drifting ice; and it was not till July 30th that the explorers landed. On the 15th of August, after working up the coast, they started from their camp near Kiatak, for the march over the Inland ice to Christianshaab on the west coast. On the 26th of August they reached the level of the Inland ice at a height of 6,000 feet, after passing through rain and snow storms and fine weather, and crossing a number of crevasses, which lose nothing in the description. The season was so far advanced that Dr. Nansen determined to make Godthaab the objective point, instead of Christianshaab. As the advance continued the level surface rose again and again, but almost insensibly. September 1, the elevation marked by the aneroid barometers, which Dr. Nansen is inclined to distrust, was 7,930 feet. The greatest height reached was 8,970 feet.

At these elevations, the sun's rays produced a powerful effect. A spirit thermometer marked 85° Fahr. in the sun, while the real temperature, as obtained by a sling thermometer, was little more than 25°; and on the 3d of September the spirit thermometer in the sun at noon showed 88°, while the temperature by the sling thermometer was 12° Fahr. Dr. Nansen put a minimum thermometer under his pillow in the night of Sept. 11, and in the morning the spirit was a good way below the scale, which marked—35° Fahr. The calculations made by Professor Mohn, of Christiania, as to the lowest temperatures experienced by Dr. Nansen's party, are largely hypothetical, none of the instruments carried registering below—35° Fahr.

September 20, the country to the south of Godthaabsfjord was in sight from the tent, but there was work to be done before the coast could be reached. As it was neared the climate improved, and there were signs of game, many kinds of birds and reindeer. September 26, thickets of willow and alder were found, the bushes as high as a man, and the alders still green. The thermometer marked 55° Fahr. in the shade in the day-time, and the nights were as mild as September nights in Norway. There was a warm and dry easterly or south-easterly wind, like the Swiss Föhn.

September 29, the clumsy little boat the wanderers had put together was launched on the fiord, and on the 3d of October Nansen and Sverdrup, the advanced guard of the party arrived at Godthaab.

As far as can be seen from his account, no observations were taken by Dr. Nansen by the coast to determine the accuracy of his instruments.

The ascent of the Inland ice began at Umivik, on the east coast, on the 15th August, so that the crossing was accomplished in fifty days, and the distance travelled to Godthaab was about 350 miles.

The expedition was in every way a memorable one, well conceived and carried through with energy and perseverance.

G. C. H.